

## OBSERVATIONS ON THE PREY AND NESTS OF SOME AUSTRALIAN SPIDER WASPS (HYMENOPTERA, POMPILIDAE)

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### Abstract

Prey records are presented for the following species of Pompilidae: *Cryptocheilus bicolor* (Fabricius), *C. distinctus* (Smith), *Priocnemis erythrothorax* (Turner), *Agenioideus nigricornis* (Fabricius), *Batozonellus tricolor* (Smith), *Telostegus nigrocinerascens* (Turner), *Pompilus cinereus* (Fabricius), *Turneromyia melancholicus* (Smith), and *Ctenostegus murrumbidgee* Evans. Nests of *Cryptocheilus distinctus* are described.

### Introduction

Relatively little has been published regarding the prey and nests of the Pompilidae of Australia despite the fact that these are conspicuous elements in the fauna throughout much of the continent. Evans and Matthews (1973) discussed seven species and pointed out notable differences in behaviour among several genera. Many of the morphological differences are doubtless correlated with behaviour patterns, so it is important to describe these when possible. For example, the unusual modifications of the head in some genera are correlated with predation on trap-door spiders (Evans, 1972); the development of the rake on the fore tarsi is correlated with nest and soil type; and the presence of scales on the body of several genera that specialize on orb weavers may well represent an adaptation for escaping from spider's webs, as pointed out for other insects by Eisner (1964).

We describe here the prey and in some cases the nests of nine species of Pompilidae which we studied during the summer of 1979-80. Six of these have not been studied in the field previously. Voucher specimens have been deposited in the collections of the University of Queensland (wasps) and the Queensland Museum (spiders).

### *Cryptocheilus bicolor* (Fabricius)

This large and familiar species occurs over the greater part of Australia. We encountered females with prey on three occasions. On 23 September a wasp was dragging a large spider backwards through a grassy area about 10 m from the Brisbane River, Queensland, holding the spider by either its chelicerae or pedipalps (we could not determine which). From time to time she dropped the spider on the ground while she explored ahead. She was captured as she began to drag her prey into tall grass. The spider proved to be *Heteropoda jugulans* Koch (Sparassidae). At Amby, Queensland, on 27 November, we saw a female *bicolor* attack a large *Lycosa* sp. (Lycosidae) in a dry, sandy creek bed. Our third encounter with the species was near Waroona, in Western Australia, on 11 April. In this instance the wasp was seen behaving in an agitated manner in a clump of dense grass and ferns, in pursuit of a large

spider which fled amongst the vegetation. A few minutes later we parted the vegetation and discovered that the spider [a female *Isopoda leishmani* Hogg (Sparassidae)] had been paralysed. As we tried to take the spider, the wasp defended it vigorously, buzzing loudly and trying to sting a stick we used as a probe. For about five minutes she circled the spider aggressively, when we finally captured her. Evans and Matthews (1973) presented two additional records of Sparassidae as prey.

#### *Cryptocheilus distinctus* (Smith)

We found two females of this species nesting 10 km south of Coonabarabran, New South Wales, 14-17 January. The first was seen digging in a sandy track through eucalypt woodland, scraping the soil into a small pile which was later dispersed (though we did not observe how this was done). The paralysed spider was hanging in the crotch of a dead bush 1.2 m away and 30 cm above the ground. The wasp visited the spider about every five minutes, each time returning to resume her digging. This nest was excavated the following day and found to contain a paralysed spider bearing an egg 3 mm long obliquely on the side of its abdomen. The spider was identified as *Eriophora biapicata* (Koch) (Araneidae). The burrow was oblique, 12 cm long, leading to a cell 6.5 cm deep. The burrow had been tightly packed with sand. The spider was still well paralysed when the burrow was excavated. The second nest was discovered in a search for nests of *Cerceris* (Sphecidae). A plastic cup had been placed over a vertical hole in compact sand, surrounded by a rim of soil. This hole was 1.5 cm in diameter and may have been made by a beetle or one of the larger species of *Cerceris*. A *Cryptocheilus* female emerged into this cup and was found to have made a nest off the side of this burrow, starting 3 cm deep and descending obliquely to a depth of 13 cm. The cell contained a paralysed *Lycosa laeta* Koch (Lycosidae); the egg was dislodged during digging.

We must express some doubt as to the identification of these wasps. *C. distinctus* was described from a male, and pending a revision of the Australian species of this genus, we cannot be certain that these females are properly associated with this species, though it seems likely on the basis of size and coloration.

#### *Priocnemis erythrothorax* (Turner)

This species is characteristic of wet sclerophyll woodland in eastern Australia. We observed a female dragging a spider across a little-used track on the slopes of Mt. Nebo, about 20 km west of Brisbane, Queensland. She grasped the spider by the base of one of the front legs, so that the spider was held in an oblique position. She was taken as she entered dense vegetation. The spider was a female of the family Miturgidae, probably a species of *Uliodon*. The wasp was compared with the type of *erythrothorax* in the British Museum (Natural History) and found to be conspecific.

***Agenioideus nigricornis* (Fabricius)**

A female of this widely distributed species was seen carrying prey in an area of compact sandy clay near Blunder Creek, on the south side of the city of Brisbane, Queensland, on 1 November. She walked forward holding a female *Steatoda femorale* (Thorell) (Theridiidae) in her mandibles. The wasp dropped her prey amongst some leaf litter and appeared to be exploring crevices in the soil when she was captured.

***Batozonellus tricolor* (Smith)**

Observations were made on this species in the same area as the preceding, on 6 December. A female was digging in a sandy road through eucalypt woodland while her paralysed spider lay exposed on the soil 30 cm away. From time to time she returned to her prey briefly, then resumed her digging; each time she appeared to experience difficulty in finding both the prey and the burrow. Wasp and prey were collected, the prey proving to be a female *Poecilopachys australasia* (Griffin and Pigeon) (Araneidae). *Batozonellus* belongs to a complex of genera (including *Poecilopompilus* and *Episyron*) which appear to be specialists on orb-weaving spiders.

***Telostegus nigrocinerascens* (Turner)**

This species was extremely common along a steep bank in a man-made excavation into fine-grained sand at the same locality as the preceding two observations. Nests were often dug into the sides of the vertical bank. Females carried their prey backward, holding one of the spider's legs, and often turned about and flew short distances with their prey. On 4 January a female was seen to fly about a meter with her prey and to land on a branch about 0.5 m above the ground. She was carrying a female *Diaea evanida* Koch (Thomisidae). Other records for members of this genus suggest that they are specialists on spiders of the genus *Diaea*.

***Pompilus cinereus* (Fabricius)**

This wasp occurs very widely in the Eastern Hemisphere and in Australia is encountered wherever there is fine-grained sand not far from water. Females characteristically walk forward carrying their prey in their mandibles. There are many published prey records, and we here add several more. In Brisbane, at the same locality as the preceding three observations, we took females with the following prey: *Lycosa palabunda* Koch, *Lycosa laeta* Koch, and *Lycosa* sp. (12 November and 4 January). At Yeppoon, Queensland, on 13 October, we took two females on sandy ridges behind the sea beach, one carrying a paralysed *Lycosa speciosa* Koch, the other *Trochosa expolita* Koch. Although all these records are for Lycosidae, there are numerous records of this species preying on errant spiders of other families (Day, 1981).

### *Turneromyia melancholicus* (Smith)

This wasp was also studied near Blunder Creek, Brisbane. On 8 December, some buzzing was heard in a small pile of sticks at the base of a clay bank in open eucalypt woodland. A short time later a pompilid appeared on top of the sticks and began grooming herself. In a moment she re-entered the pile of sticks and reappeared dragging a paralysed spider behind her, grasping it in her mandibles by the chelicerae or pedipalps. Wasp and spider were taken; the latter proved to be a female *Olios punctatus* Koch (Sparassidae).

### *Ctenostegus murrumbidgee* Evans

Females of this small wasp were seen carrying spiders backward over the soil. The first was at Eungella National Park, about 80 km northwest of Mackay, Queensland, on 17 October. The spider was identified as *Clubiona* sp. A second female was seen digging an oblique burrow in sandy clay soil beneath a picnic table. Males were common in this area and were seen to approach females on several occasions, tending to confirm a sex association previously based only on museum material. Near Blunder Creek, in Brisbane, a female *murrumbidgee* was seen carrying a female *Chiracanthium* sp. She was taken as she tried to free the paralysed spider from a spider's web in which it became entangled. Both of these spiders belong to the family Clubionidae. This is only the third published prey record for members of this large genus: *C. warragai* Evans and *C. buromi* Evans are both reported to prey on *Lycosa* (Evans and Matthews, 1973; Evans, 1976).

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